

Applicant : John Smit
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Filed : December 6, 2001
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Attorney's Docket No.: 08106-005001 / 80021-471

REMARKS

Claims 1-15 and 17-21 are pending in the application. Claims 1-3 and 5 have been amended. Claim 16 has been cancelled without prejudice as directed to a non-elected invention. Claim 21 has been added. Support for these amendments and the new claim can be found in original claim 5 and in the specification at, e.g., pages 14, lines 31-32; and page 15, lines 1-2 and 18-23. These amendments add no new matter.

35 U.S.C. § 112, 1st Paragraph (Written Description)

On pages 2-4 of the Office Action, the Examiner rejected claims 1-5 as allegedly containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention at the time the application was filed.

Applicant respectfully traverses the rejection in view of the amendments to independent claim 1 and the following comments. In the Example 14 of the Written Description guidelines, entitled "Product by Function", it is suggested that where an applicant specifies a sequence for a protein, whereby the applicant contemplates but does not exemplify variants of the protein and the applicant places a limitation on identity and specifies an activity, the applicant may be considered to be in possession of the necessary common attributes possessed by members of that genus. In the present application, amended claim 1 provides a sequence as identified by SEQ ID NO:5, places a limitation on identity in that the amino acid sequence is required to share at least 80% sequence identity with SEQ ID NO:5, and specifies an activity whereby the sequence is that of a surface layer transport protein. Furthermore, at page 36 at lines 11-13 of the specification partial sequences from non-*C. crescentus* *Caulobacter* (FWC 19 and FWC 42) are compared to the *C. crescentus* RsaE sequence, thereby providing examples of non-*C. crescentus* *Caulobacter* (see page 35 line 29) transport proteins. The amended claim provides a precise definition of the structure and a formula which describes the claimed subject matter in a manner sufficient to distinguish it from other materials.

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In light of the above, a person of ordinary skill in the art would clearly understand the structural/functional description of the protein recited in the claims and would therefore understand applicant to have been in possession of the claimed subject matter at the time the application was filed. Accordingly, applicants submit that the claims satisfy the written description requirement and request that the Examiner withdraw the rejection.

35 U.S.C. § 112, 1st Paragraph (Enablement)

On pages 4-6 of the Office Action, the Examiner rejected claims 1-15 and 17-20 as allegedly not enabled. According to the Examiner, the specification, while being enabling for *Caulobacter crescentus* surface layer protein secretion signals, does not reasonably provide enablement for all *Caulobacter* surface layer protein secretion signals.

Applicant respectfully traverses the rejection in view of the amendments to independent claim 1 and the following comments. The specification, at page 13 (lines 23-25), teaches that "there is moderate variability between surface layer proteins (including the secretion signal) from different species of freshwater *Caulobacter*". At pages 14 (lines 8-29) methods for identifying additional S-layer proteins are described. At page 36 (lines 5-9 and 15-27) of the specification, non-*C. crescentus* (FWC1 and FWC19) secretion signal sequences are taught. Furthermore, at page 32 (lines 29-31) the specification teaches that "the transport mechanism in the non-*C. crescentus* species are Type I mechanisms capable of recognizing diverse type I (C-terminal) secretion signals" (FCW8, 9, 17, 19, 28, 32, 39, and 42). In addition to this disclosure, applicant notes that, even in an unpredictable art, it is not necessary that a specification contain working examples of all species covered by a claim to satisfy the enablement requirement.

In light of the disclosure contained in the application as filed, combined with the state of the art at the time of filing the present application, the skilled biologist would have been able to carry out the full scope of the claimed invention without undue experimentation. Accordingly, applicant requests that the Examiner withdraw the rejection.

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35 U.S.C. § 112, 2nd Paragraph (Indefiniteness)

On pages 6-7 of the Office Action, the Examiner rejected claims 1-7 and 14 as allegedly indefinite.

Claims 1-7 were rejected as reciting non-elected subject matter. Claims 1-7 have been amended to delete the recitation of the non-elected sequence SEQ ID NO:4, thereby obviating the present rejection.

The Examiner objected to the term "suitable" as used in claim 5. The specification describes the "suitability" of hosts for expression and secretion at page 14, lines 31-32 and page 15, lines 1-16. Screening of *Caulobacter* for use as a host organism is described at page 16, lines 16-29, page 33, lines 3-31 and at page 34, lines 1-20 of the specification. In light of this disclosure, the skilled artisan would readily understand the meaning and scope of the claim term. Applicant respectfully requests that the Examiner withdraw the rejection.

The Examiner rejected claim 14 on the grounds that the term "*C. crescentus*" has insufficient antecedent basis because the parent claim recites "protein secretion signal not present in *C. crescentus*". As the Examiner has pointed out, the secretion signal is not from *C. crescentus* when the transport proteins have the same sequence as SEQ ID NO:5. However, this limitation does not apply to the host cell, which may be a "bacterial cell" including *C. crescentus* as defined in claim 12, from which claim 14 depends. In light of these comments, applicant respectfully requests that the Examiner withdraw the rejection of claim 14.

35 U.S.C. § 102(b)

On pages 7-8 of the Office Action, the Examiner rejected claims 1, 4, 8-13, 15, and 19-20 as allegedly anticipated by Smit et al., U.S. Patent No. 5,550,353 ("Smit"). In the Office Action, the Examiner cited U.S. Patent 5,550,353 ("Induction Heating Coil Assembly for Prevent of Circulating Current in Induction Heating Lines for Continuous Cast Products"), which applicant understands was meant to refer to the Smit et al., U.S. Patent No. 5,500,353.

To expedite prosecution, applicant has amended claim 1 to require that the recited surface layer transport protein have an amino acid sequence sharing at least 80% sequence identity with

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SEQ ID NO:5. Smit describes neither the sequence represented by SEQ ID NO:5 nor a surface layer transport protein having an amino acid sequence sharing at least 80% sequence identity with SEQ ID NO:5. As a result, applicant respectfully submits that Smit does not anticipate the claimed invention and request that the Examiner withdraw the rejection.

On page 8 of the Office Action, the Examiner rejected claims 5-7 as allegedly anticipated by Awram et al. (1998) J. Bacteriol. 180:3062-69 ("Awram").

Applicant respectfully submits that Awram does not anticipate claims 5-7. The oligonucleotides used by Awram for hybridizations (see page 3063) are not "oligonucleotides capable of selective hybridization to a nucleotide sequence encoding SEQ ID NO:5", which corresponds to *rsaE*. The only oligonucleotides used by Awram for hybridizations are the PCR "primers" used to amplify from the pRAT1 plasmid, the "Tn5 probe" used for southern blotting of chromosomal DNA isolated from the Tn5 library and the "radiolabelled *rsaA*" probe for screening the NA1000 cosmid library. The PCR primers, although capable of amplifying a PCR product containing *rsaD* and *rsaE* from the pRAT1 plasmid, do not selectively hybridize to SEQ ID NO:5. The PCR primers described by Awram at page 3063 hybridize to pRAT1 sequence, but not within either of the coding sequences for *RsaD* or *RsaE*. In fact, these primers were designed to hybridize to sequences over 100 nucleic acids upstream of the *RsaD* start codon and over 100 nucleic acids downstream of the end of the *RsaE* coding sequence. Similarly, the "Tn5 probe" and "radiolabelled *rsaA*" probe do not selectively hybridize to SEQ ID NO:5.

Furthermore, to expedite prosecution, applicant has amended claim 5 to recite a step of extracting DNA from "non-*C. crescentus* *Caulobacter*". Awram does not teach such a limitation, as the *Caulobacter* strains used in Awram are from *C. Crescentus*. Awram does not disclose the extraction of DNA from any non-*C. Crescentus* *Caulobacter*. Therefore, the Awram does not anticipate amended claim 5 or the claims that depend therefrom. As a result, applicant respectfully requests that the Examiner withdraw the rejection.

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Conclusions

Applicant asks that all claims be allowed in view of the amendments and remarks contained herein.

Enclosed is a Petition for Three Month Extension of Time. Please charge the required extension fee and any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 08106-005001.

Respectfully submitted,

Date: December 3, 2003

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